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JOB PROGRESS REPORT

RESEARCH PROJECT

State	<u>Montana</u>	Title	<u>Statewide Wildlife Research</u>
Project No.	<u>W-120-R-10(5894)</u>	Title	<u>Nongame Animal Research</u>
Program No.	<u>III</u>	Title	<u>Nongame Animal Research</u>
Study No.	<u>NG-49.1</u>	Title	<u>Habitat characteristics of bobcat, Canada lynx and</u>
Job No.	<u>2</u>		<u>river otter.</u>

Period Covered: July 1, 1979 - June 30, 1980

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Date: September 10, 1980

Since this is a progress report only, results presented herein are not necessarily final and may be subject to change. For this reason, the information contained in this report may not be published or used for other purposes without permission of the Director.

**ABSTRACT:**

Montana maps that depict habitats and distribution of bobcat, Canada lynx and river otter are being developed. Harvest data from these species are being incorporated on a continuing basis.

Biological specimens were obtained and analyzed from 191 bobcats, 5 lynx and 7 otter to determine sex and age structure, food habits, reproductive status and history, general condition, and disease and parasite loads.

A long-term, intensive bobcat ecology study is underway in Missoula, Granite and Powell counties to investigate the general ecology and biology of bobcat populations in a coniferous forest environment.

A river otter population status and distribution study in southwestern Montana is in progress.

**OBJECTIVE:**

To conduct studies providing information on the habitat of bobcat, Canada lynx and river otter and transform these data into improved management guidelines for these species.

**PROCEDURES:**

Montana base maps and overlays are being used to designate general habitat and geographic distribution of the harvested and observed increments of the bobcat, Canada lynx and river otter populations.

Department personnel are being consulted regarding the location and general quality of bobcat habitat within their respective areas. Aerial reconnaissance, aerial photos and landsat imagery will be used to derive detail for the base maps. Harvest records are being related to various habitat types, human habitation and land use patterns.

Biological samples from bobcats, Canada lynx and river otter were processed in the Department wildlife lab (Greer and Palmisciano, 1980) using the degree of foramen closure as criteria for differentiating the young of the year from the older age classes. Cementum annuli were designated by a commercial lab on the older specimens.

Stomach and/or colon contents were analyzed (Greer and Palmisciano, 1980) using known reference material to qualitatively and quantitatively designate food items and the presence of parasites and disease.

The general condition of carcasses was determined using a descending classification ranking system of 1-5 that considered body, omentum and kidney fat indices (Greer and Palmisciano, 1980).

Reproductive tracts were prepared for analysis to determine reproductive status and history (Greer and Palmisciano, 1980).

A long-term, intensive study of bobcat ecology in a coniferous forest habitat is in progress. Telemetry is being used to gather relocation data from sample animals of known age, sex and origin. Migrations, dispersal, range use, habitat selection, response to hunting and/or trapping pressure, response to variation in weather and other movements data is being compiled.

Habitat and range use will be delineated on maps and overlays of the area in reference to known cover types and habitat types that are present.

Food habits data will be compiled from the analysis of digestive tracts of harvested animals and the analysis of scats collected within the study area. These data will be related to prey species availability as determined by sample trapping within specific habitat types.

Data regarding long-term population structure and dynamics will be compiled utilizing reproductive tracts and jaws from harvested animals to designate sex, age classes, reproductive history and success. Kitten survival will be investigated using radio telemetry and direct observations.

Relationships of bobcats to prey and other predatory species will be investigated.

Visual observation of otters and otter sign are the primary technique being employed to assess otter populations and to compare relative otter densities on the rivers of the upper Missouri group. Boat and foot travel and aerial reconnaissance are the primary techniques that are being utilized.

The physical characteristics of occupied otter habitat are being recorded. These data will be used to compare occupied areas with the existing spectrum of habitats to denote habitat selection or preference. Digestive tracts from harvested otter and scats will be collected and analyzed to determine food items. These data will be related to the existing food base within occupied habitats.

The possibility of inducing otter to use or visit artificially created latrine sites is being evaluated as an otter population trend assessment technique.

#### FINDINGS:

##### Bobcat Studies

Montana base maps delineating general areas of bobcat habitat have been prepared. The geographic distribution of harvested and observed animals has been plotted for the past two seasons. The plotting procedure for the 1979-80 harvest remains in progress.

The age classes of 191 bobcats, 15 percent of the 1979-80 harvest, are presented in Table 1. Young of the year and age classes 1, 2 and 3 comprised 35, 29, 15 and 11 percent of the sample, respectively. No bobcats 10 or more years old were harvested.

The sex ratio of 1292 registered bobcats harvested during the 1979-80 season was 1.00 males to 0.95 females.

Food habits data from 94 bobcats are presented in Table 2. Rabbits, microtines, birds, and porcupines comprised 32, 15, 5 and 5 percent of the food items, respectively.

The general condition of harvested bobcat carcasses are presented in Table 3. A mean value of 2.71 on a scale of 1-5 was determined. This index was somewhat above the 3.10 mean value recorded for the previous season.

A general study area was selected for intensive study of bobcat ecology in Missoula, Granite and Powell Counties. The principal investigator moved to the area at the end of the previous reporting period and field operations began in December 1979. Field camp facilities and equipment were obtained and transported to the study area. Trapping operations were initiated by a masters candidate in January 1980. Approximately 500 trap nights produced two bobcat visits and no captures January and February from the Rock Creek drainage. Trapping efforts by the master's candidate in the Rock Creek drainage were terminated about mid-March.

An additional trapping effort of approximately 1000 trap nights by the principal investigator in several drainages north of the Clark Fork River during late March and early April produced three bobcat visits and the capture of one female bobcat. The captured bobcat was immobilized and fitted with a radio collar and released at the capture site. This animal has been regularly monitored and data on range, movements and habitat selection are being obtained. The results are inconclusive and analysis will be initiated when adequate data from this and other animals has been acquired.

The trapping success ratio appears to have been directly related to the unusually mild winter with a general lack of snow accumulation, an abundance of snowshoe hare, cottontail rabbits and pine squirrels, and heavy commercial trapping pressure.

Sixteen bobcat tracks were encountered while traveling over 2,550 transect kilometers of trails and/or roads during good tracking conditions as part of the total field effort.

#### Otter Studies

A masters candidate began field operations on the status and distribution of the river otter in the Missouri headwaters river system in November 1979. Data are being successfully gathered upon the population status, habitat utilization and a supplemental progress report is pending.

#### RECOMMENDATIONS:

Field studies of these species were commenced during November and December, 1980 and should be fully operative during the 1980-81 reporting period.

The intensive bobcat study should be continued for a minimum of 5 years. Similar studies are needed in other major habitats especially in eastern Montana.

The on-going otter study should be continued and other similar studies should be conducted to obtain population status and distribution in other regions in Montana and within an area of unexploited populations in order to obtain comparative data.

The carcass study should be expanded to include all harvested bobcat, lynx, and otter carcasses on a continuous basis for a 3 year period. Mandatory transmittal of all harvested bobcat, lynx and otter carcasses to the Department of Fish, Wildlife and Parks is recommended. This would ensure an adequate sample to obtain valid baseline information on the sex and age structure, reproductive status and history, food habits, general condition and disease and parasite loads of the harvested segments of various populations by species.

Table 1. Bobcat ages in years, 1979-80 harvest, as determined by cementum layers of upper canines.

REGION	½	1	2	3	4	5	6	7	8	9	TOTAL
1	8	3	2	3	0	0	1	0	0	0	17
2	9	3	5	1	0	0	1	0	0	2	21
3	16	16	6	3	0	0	0	0	0	1	42
4	5	4	0	7	0	0	1	0	0	0	17
5	10	9	3	1	0	1	0	1	1	0	26
6	0	0	1	2	0	1	0	0	0	0	4
7	14	16	7	0	3	0	3	0	0	1	44
Unknown	5	5	4	4	1	1	0	0	0	0	20
State Total	67	56	28	21	4	3	6	1	1	4	191
Percentages	35	29	15	11	2	2	3	Tr.	Tr.	2	99

Table 2. Incidence of food items found in stomach and/or descending colon of bobcat carcasses from the 1979-80 harvest.

Items	Region							Unk.Loc.	Total		
	1 Sample	15	2 16	3 31	4 9	5 9	7 10				
<u>Mammals</u>											
<u>Cervidae:</u>											
Deer (Mule, WT) 1/											
Elk			1	3					4		
Unidentified			1						1		
<u>Lagomorpha:</u>											
Cottontail				3				1	1		
Snowshoe Hare											
Domestic rabbit					1				1		
Unidentified	3		6	10	3	1	2		25		
Total	3		6	13	4	1	3	1	31		
<u>Others:</u>											
Porcupine			1	2		2			5		
Muskrat	1		1						2		
Microtus sp.	2		4	4	1	1	3	1	16		
Peromyscus sp.				2	1				3		
Pocket gopher			1						1		
Red Squirrel	1		2				2		5		
Ground squirrel			1						1		
Flying Squirrel			2						2		
Wood rat ( <u>Neotoma cinerea</u> )					1				1		
Prairie dog ( <u>Cynomys ludovicianus</u> )					1				1		
Raccoon ( <u>Procyon lotor</u> )							1		1		
<u>Birds:</u>											
Grouse - unid.		1							1		
Bird - unid.			1		3		1		5		

1/ *Odocoileus hemionus* and *O. virginianus*

Table 3. Bobcat fat index ratings from carcasses obtained from the 1979-80 harvest.

Region	No. Individuals Condition Rating <sup>1</sup>					Total
	1	2	3	4	5	
1	3	3	1	1	4	12
2	4	7	3	4	0	18
3	7	11	7	6	2	33
4	5	1	1	2	1	10
5	3	5	0	1	0	9
7	1	2	1	3	4	11
Unknown	0	2	2	0	0	4
Total	23	31	15	17	11	97
% of Class; Statewide	24	32	15	18	11	100
Mean rating 2.71						

<sup>1</sup> 1-5 ratings with 1 as highest index and 5 as the lowest.